

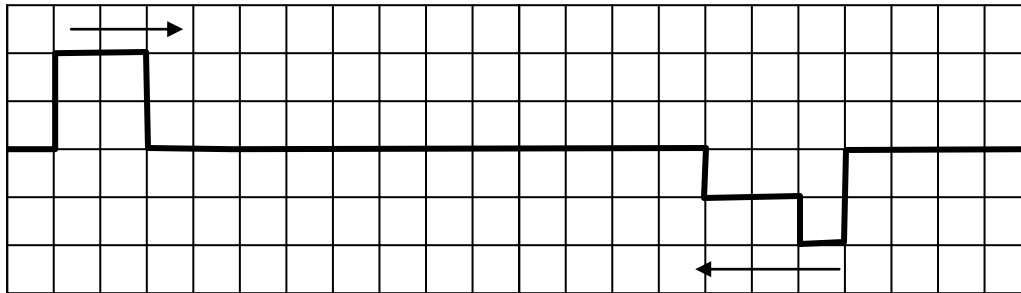
PHYSICS 2.3

Name: _____

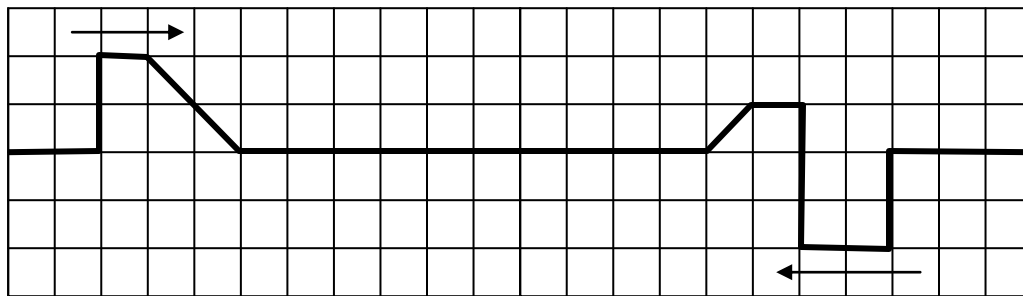
WORKSHEET SEVEN: WAVES

SUPERPOSITION AND STANDING WAVES

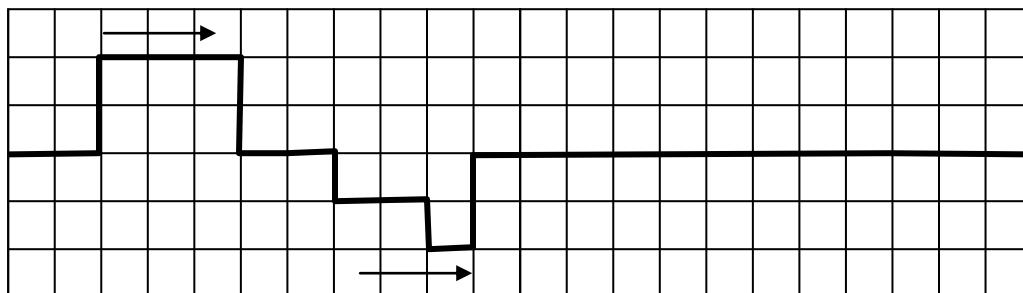
1. The two pulses below are approaching each other at a speed of one square per second. Draw their superposition after 7 seconds have elapsed.



2. The two pulses below are approaching each other at a speed of 2 squares per second. Draw the superposition after 3 seconds have elapsed.



3. The two pulses below are moving in the same direction. The left hand one is travelling at 5 squares per second and the right hand one at 2 squares per second. Draw the superposition after 2 seconds.

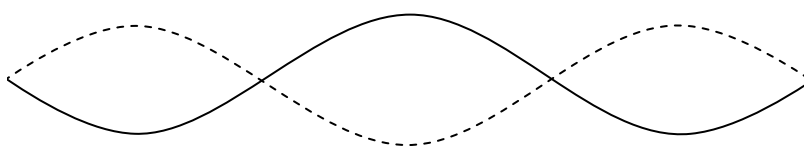


4. A standing wave is produced as a wave travels through a medium and is _____ back on itself. The interference between the original wave and its reflection as they travel in

_____ directions can produce a new waveform called a _____ wave. A standing wave is characterised by constant positions of no _____ where the two waves cancel each other out. These positions are called _____. In between these nodes there are positions where the displacement of the medium is _____. These positions of maximum displacement are called _____.

(**nodes, antinodes, maximum, opposite, reflected, standing, displacement**)

5. Label the nodes and antinodes on the standing wave shown below. Also identify one wavelength.



6. A standing wave is set up in a taut string. The string is vibrated at a frequency of 350 Hz. The string is 1 m long and a total of 6 antinodes are counted along its length.
(a) What is the wavelength of the standing wave?

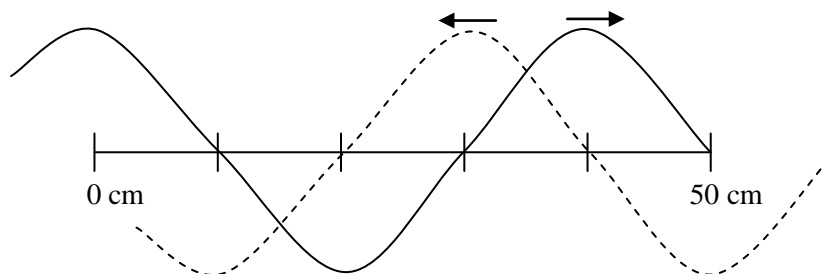
- (b) What is the speed of the wave in the string?

7. Many musical instruments work by producing standing waves in strings, wires or air columns.

Name one instrument that uses vibrating wires to produce sound. _____

Name an instrument that uses vibrations in an air column to produce sound. _____

8. The two waves shown below are interfering on the same string to produce a standing wave. At the instant shown, both waves are travelling at 10 cm s^{-1} .



How much time will elapse before the string is showing zero displacement over its whole length?
